TETRA TECH

January 3, 2019

Ms. Elizabeth Koesterer
Project Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Blvd.
Lenexa, Kansas 66219

Subject: Clean Air Act Accident Inspection Report, Revision 01
Big Ox Energy – Siouxland, LLC
1616 D. Avenue, Dakota City, Nebraska 68731
U.S. EPA Region 7 START 4, Contract No. EP-S7-13-06, Task Order No. 0028
Task Monitor: Elizabeth Koesterer

Dear Ms. Koesterer:

Tetra Tech, Inc. is submitting the attached revised report regarding inspection of the Big Ox Energy – Siouxland, LLC facility in Dakota City, Nebraska, on November 13-14, 2018. The report documents inspection activities and identifies findings with respect to Section 112(r) of the Clean Air Act (CAA). If you have any questions or comments, please contact the Project Manager at (816) 412-1775.

Sincerely,

Robert Monnig, PE, CHP
START Project Manager

Ted Faile, PG, CHMM
START Program Manager

Enclosure

cc: Debra Dorsey, START Project Officer (cover letter only)

415 Oak Street, Kansas City, MO 64106
Tel 816.412.1741 Fax 816.410.1748 www.tetratech.com

CAA112(r) INSPECTION REPORT

Name: Big Ox Energy – Siouxland, LLC	
Address: 1616 D Avenue, Dakota City, NE 68731	**Date of Inspection**: November 13-14, 2018
County: Dakota	**Case No**: 18NE1113
Phone: 844-491-1953	**RMP No**: N/A
High Risk: No	**FRS No**: 1100 6458 7656
CAA Title V: No (NDEQ CP15-033)	**Program Level**: General Duty Clause
Mailing Address: 6601 County Road R, Denmark, WI 54208	
Process: Biogas production from anaerobic digestion of wastewater from multiple sources. NAICS: 325199 – All other basic organic chemical manufacturing	

SUMMARY OF OBSERVATIONS

An inspection of the Big Ox Energy – Siouxland, LLC facility in Dakota City, Nebraska (Big Ox) and review of facility documents revealed the following:

1. **The facility had failed to design and maintain a safe facility by not maintaining as-built drawings, having no formalized management of change program, not preventing exposure of employee to hydrogen sulfide, and not controlling methane and hydrogen sulfide in and outside of receiving bay as required by Section 112(r)(1) of the Clean Air Act (CAA).**

INTRODUCTION

I, Robert Monnig, Tetra Tech, Inc. (Tetra Tech), as a representative of the U.S. Environmental Protection Agency (EPA), Region 7, and Dave Hensley with EPA Region 7 inspected the Big Ox facility on November 13-14, 2018. The Big Ox facility was selected for inspection based on a report that on August 28, 2018, a Big Ox employee was injured in the unloading bay of the facility during unloading of a tanker truck. We conducted the inspection to determine if the facility complies with Section 112(r) of the Clean Air Act (CAA), as amended in 1990, and to assess the facility's compliance with requirements of an Administrative Order for Compliance on Consent (AOC) that was signed on September 19, 2018. The facility also had been the subject of a CAA inspection by EPA on February 13 and 15, 2017.

Kyle Morton, an inspector with the Nebraska Department of Environmental Quality (NDEQ), accompanied us on the inspection. Mr. Morton collected information regarding the facility's compliance with the State of Nebraska's air quality regulations and the facility's air quality construction permit CP17-033 that was issued on April 9, 2018.

EPA has published a document, EPA 550-B00-002, dated May 2000, titled "Guidance for Implementation of General Duty Clause Clean Air Act Section 112(r)(1)." This publication is intended solely for use by government personnel but is available to the public at EPA's website. Section 112(r)(1) of the CAA requires that owners and operators of stationary sources identify hazards that may result from accidental releases, apply appropriate hazard assessment techniques, design and maintain a safe facility and take necessary steps to prevent releases, and minimize effects of accidental releases that occur whenever extremely hazardous substances are present at their facility. The General Duty Clause of Section 112(r)(1) and its implementation promote safe operating practices and prevention of chemical accidents.

All attachments cited in this inspection report (Attachments 1 through 3) are also in a folder on the accompanying CD (Attachment 4). Folder numbers on the CD correspond to attachment numbers. As an example, Attachment #2 is in Folder #2. Attachments may not contain all documents or parts of documents collected at the time of the inspection; however, the accompanying folders on the CD will include the complete document(s). The CD (Attachment 4), and contains a copy of this inspection report, photographs taken during the inspection, checklists, and completed forms.

HISTORY OF BUSINESS

Big Ox is a new, biologically based, natural gas production facility in Dakota City, Nebraska. The Big Ox facility can produce as much as 1,314 million standard cubic feet of biogas per year via an anaerobic digestion process. Feedstocks to the Big Ox digesters include process wastewater and organic wastes from surrounding industries. Big Ox Energy LLC appears to be the parent company or owner of Big Ox Energy- Siouxland, LLC.

PERSONS INTERVIEWED AND INDIVIDUAL RESPONSIBILITIES

We interviewed the following persons as part of the inspection process:

Desiree McCaslen ..... Compliance Director, Big Ox
Jody Anderson ..... Plant Manager, Big Ox
Elijah Anderson ..... Technician, Big Ox
John Gutierrez ..... Technician, Big Ox
Bill Guerry (by telephone) ..... Attorney, Big Ox
Ted Sommer (by telephone) ..... Safety Director, Big Ox

OPENING CONFERENCE

Mr. Hensley, Mr. Morton, and I arrived at the Big Ox facility in Dakota City, Nebraska, on Tuesday, November 13, 2018, at approximately 1:00 p.m., signed in at the security station, and met with Ms. Desiree McCaslen, Compliance Director, and Mr. Jody Anderson, Plant Manager, in a conference room. Mr. Hensley explained that we were conducting the inspection under authority of the CAA's Chemical Accident Prevention Provisions. Mr. Hensley explained that the inspection would likely require 2 days to complete, and would include a walk-through of the facility (including photographic documentation), collection of documents, and interviews with facility personnel. He stated that at the end of the inspection, we would conduct an exit interview to explain findings, provide a receipt for any documents collected, and answer questions. Mr. Hensley then filled out a Notice of Inspection Form (see Attachment 1), explained that the inspection was for enforcement purposes, and stated that enforcement actions could result from the inspection. Ms. McCaslen signed the Notice of Inspection form. Ms. McCaslen introduced us to Mr. Jody Anderson and explained that it was his second day with Big Ox and that he would be the new Plant Manager for the facility. Ms. McCaslen told us that she was transitioning into the role of Compliance Director. Ms. McCaslen was previously the Plant Manager.

After the introductions, we began directing questions to Ms. McCaslen and Mr. Jody Anderson and requested facility documents. Mr. Hensley noted his findings on the Region 7 Checklist for General Duty Inspection Under CAA 112(r) (see Attachment 1).

INTERVIEWS WITH FACILITY PERSONNEL

During the inspection, Mr. Hensley, Mr. Morton, and I requested various facility documents and information. At the beginning of the inspection, Ms. McCaslen suggested that she compile a list of requested documents/information, because most facility documents were not immediately available to her, and the facility believed that some documents requested had already have been requested by, or provided to, EPA, NDEQ, or the Occupational Safety and Health Administration (OSHA). Mr. Hensley addressed the latter concern by reviewing the list of requested documents with Ms. McCaslen, and they identified six out of 31 document requests that were related to previous EPA document requests. These documents were highlighted red on the list of requested documents. On the second day of the inspection (November 14, 2018), Mr. Hensley and Ms. McCaslen discussed when the requested documents would be provided to EPA, and Mr. Hensley and Ms. McCaslen agreed to a timeframe within 7 days following the inspection. The requested list of documents compiled by Ms. McCaslen and reviewed by Mr. Hensley at the end of the inspection is in Attachment 2.

Following is a summary of information obtained during the inspection interviews.

Descriptions of Facility Processes

Mr. Hensley asked Ms. McCaslen various questions regarding design and operation of the facility's processes. The following summarizes information provided by Ms. McCaslen during the interview:

Hauled-In, High-Strength Waste Unloading Operations

We asked about the various hauled-in feedstocks to the digesters and how the facility receives them, and Ms. McCaslen provided the following information:

- Big Ox receives feedstock via tanker trucks from 56 sources that the facility has pre-approved. These feedstocks are referred to as "hauled-in, high-strength waste" (hauled-in waste). The facility uses an approval process for hauled-in wastes that includes laboratory analysis.

- Most of the hauled-in waste feedstocks are transported by a trucking company with a related ownership to Big Ox. The trucks carry shipment manifests and are scheduled.

- On arrival, the trucks are weighed and then backed into the receiving bay. After a truck is positioned in the receiving bay over a sub-floor pit, a Big Ox employee wearing a four-gas personal monitor climbs onto the truck trailer and opens a hatch on the top of the tank so that vacuum is not created as the contents are emptied. A valve at the back of the truck is then opened to dump the mostly liquid feedstock into the pit. Material that does not flow into the pit is squeegeed and/or washed into the pit. A grab sample of the feedstock is collected as the truck unloads and is taken to the on-site laboratory where pH and temperature are measured; other parameters are also measured based on what feedstock is being received and any contract conditions. Two Big Ox employees typically work in the receiving bay; however, due to a staffing shortage, there are some nights when only one employee works in the receiving bay.

- From the receiving pit, the hauled-in waste is pumped into a mixing tank where pH and temperature can be adjusted. From the mixing tank, the material is pumped into Digester 1.

- If a four-gas monitor carried by an employee in the receiving bay indicates an alarm, it is the facility's policy that the employee leaves the area and reenters wearing a self-contained breathing apparatus (SCBA).

Ms. McCaslen told us that in addition to hauled-in wastes, the facility also receives municipal sewage via force mains.

Digester and Biogas Cleanup Gas Skid Design and Operation

Mr. Hensley and Mr. Morton asked Ms. McCaslen various questions regarding design and operation of the digesters and biogas cleanup gas skid. The following summarizes information provided by Ms. McCaslen during the interview:

- The facility has two digesters—referred to as Digester 1 and Digester 2—each with a capacity of 2,000,000 gallons. Material flows in series through the digesters, first through Digester 1 and then through Digester 2.

- Eight sumps are at the bottom of each digester, and five mixers are at the top of each digester. During the inspection, Ms. McCaslen told us that Mixer 1 and Mixer 2 on Digester 1 were not functioning.

- Gas produced in the digesters is captured by two headers positioned within the headspace of each digester. The facility monitors concentrations of methane, carbon dioxide, oxygen, and hydrogen sulfide using Biogas 5000 detectors.

- The headers from the digesters combine, and the gas can be sent to either the biogas cleanup skid (gas skid) or an enclosed flare.

- The facility uses a digital control system (DCS) to monitor the digesters and other equipment involved in the process. Various DCS screens can be displayed on any facility computer. Mr. Henley asked for a screenshot of the DCS screen that displays digester information.

- Pressure sensors in the liquid and gas spaces of the digesters are monitored to determine liquid levels in the digesters. Ms. McCaslen told us that liquid levels in the digesters are normally maintained around 18.5 feet. At approximately 1:20 p.m. on November 13, 2018, Ms. McCaslen referred to the DCS and told us that the liquid level in Digester 2 was 19.1 feet.

- Biogas entering the gas skid is subjected to various processes to remove hydrogen sulfide, carbon dioxide, and water vapor, leaving mostly methane—to be compressed and then conveyed to a natural gas pipeline.

- A Big Ox employee operates the gas skid from an outbuilding near the skid that houses electrical equipment and a DCS terminal.

- At the gas skid, methane, hydrogen sulfide, oxygen, and carbon dioxide are monitored by sensors at two locations: ATICS3 located after the dry media scrubber, and ATICS4 located before the carbon dioxide stripper. The ATICS3 sensor indicated 1.24 parts per million (ppm) hydrogen sulfide during the inspection.

- During the inspection, Ms. McCaslen referred to the DCS and indicated that the gas skid was feeding 504 standard cubic feet per minute (SCFM) of biomethane to the pipeline.

August 2018 Incident in Receiving Bay

We asked Ms. McCaslen about the incident on August 28, 2018. Ms. McCaslen told us that the incident had occurred in the receiving bay during unloading of hauled-in waste from a tanker truck. Ms. McCaslen stated that as the truck contents were being unloaded into the receiving pit, mixing of the hauled-in waste from the truck with material already present in the receiving pit induced off-gassing from the pit materials. Ms. McCaslen said that an employee near the receiving pit during the off-gassing had reported becoming nauseous. Ms. McCaslen told us that the exposed employee had left his four-gas monitor in the breakroom and thus had not been carrying his assigned four-gas meter when he was near the unloading truck. She stated that the

facility's policy is that any employee in the receiving bay shall have a four-gas monitor on his/her person, and that the exposed employee had been trained in this policy. She said that during the incident, another employee's four-gas monitor alarmed for hydrogen sulfide, and that both employees had evacuated the area upon hearing the alarm.

Ms. McCaslen stated that the exposed employee had continued to be nauseous after the exposure, and therefore she had driven the employee to a local emergency room. She told us that at the hospital, the employee had received fluids intravenously, had his blood tested, and was observed for possible effects from chemical exposure. She told us he had not been admitted and left the hospital a few hours later.

We asked if any administrative controls would have prevented him from working without a four-gas monitor. Ms. McCaslen said that the facility trains employees and relies on them to abide by procedures. She told us that the same employee who had been exposed on August 28, 2018, was observed on a subsequent date not wearing his four-gas monitor, resulting in his termination of employment with Big Ox.

I asked Ms. McCaslen if the facility had a written procedure that instructs employees to don respiratory protection based on certain action levels, events, or tasks performed. Ms. McCaslen told us she did not know if the facility had such a written procedure.

We asked about the hauled-in waste unloaded at the time of the incident. Ms. McCaslen responded that some materials are known to be more problematic regarding off-gassing of hydrogen sulfide and other vapors, but that the material unloaded during the August 2018 incident typically does not cause problems.

I asked Ms. McCaslen about off-gassing during the incident. Ms. McCaslen had told us that off-gassing had occurred in the receiving pit when material from the truck being unloaded mixed with material already in the pit. I asked if this mixing hazard was understood by the facility employees, and asked if the off-gassing had occurred due to a chemical reaction between the unloaded material and the pit material or if the off-gassing had been related to physical agitation of the materials. Ms. McCaslen told us that she did not know, and that the incident could have resulted from either a chemical reaction or physical agitation of the materials.

Hydrogen Sulfide Concentrations in Receiving Bay Exceeding National Institute for Occupational Safety and Health (NIOSH) Immediately Dangerous to Life or Health (IDLH) Levels

On August 6, 2018, EPA sent Big Ox a Monitoring Order and Request for Information pursuant to Section 114 of the CAA. In response, EPA began receiving monitoring data from Big Ox on August 21, 2018. The data included results from fixed-location continuous monitors for hydrogen sulfide and methane at various locations within the Big Ox facility, including the receiving bay. Mr. Hensley had reviewed these data prior to the inspection; he asked Ms. McCaslen about occurrences of hydrogen sulfide concentrations within the receiving bay exceeding 100 ppm, which is the NIOSH IDLH level for hydrogen sulfide (OSHA defines IDLH as the "level that interferes with ability to escape"). Ms. McCaslen showed Mr. Hensley a spreadsheet indicating what feedstocks were unloaded when IDLH exceedances had occurred in

the receiving bay. Mr. Hensley requested a copy of the incoming hauled-in waste loads for October 2018, and Ms. McCaslen added this to her list of requested documents (see Attachment 2).

Mr. Morton asked if emissions from the receiving bay are controlled by the odor control scrubber (EP14). Ms. McCaslen responded that loading operations are not controlled by EP14, and that emissions exhaust through a heating, ventilation, and air conditioning (HVAC) point on the roof.

Mr. Hensley asked what type of hauled-in material had been unloaded on October 22, 2018, at 3:47 p.m. Ms. McCaslen consulted the daily logs and told us that the unloaded material was "hind gut." She told us that this was one of the types of hauled-in waste known to present issues with hydrogen sulfide off-gassing, and that employees know to don SCBA respiratory protection before unloading hind gut. Mr. Hensley asked if this policy is documented in a written standard operating procedure (SOP). Ms. McCaslen said that it was, and that she would provide the SOP. Mr. Hensley asked how materials with the hydrogen sulfide off-gassing issue are identified, and Ms. McCaslen told us that the issue is sometimes identified through initial characterization of the material type or is sometimes identified through trial and error.

Digester Mixer Repair

The AOC signed on September 19, 2018, requires Big Ox to address non-operational mixers on the digesters. Mr. Hensley asked Ms. McCaslen about the status of the non-operational mixers. Ms. McCaslen told us that Mixer 1 and Mixer 2 on Digester 1 were not functioning. She said that presently (during the inspection) a crew was installing a new or repaired mixer into Port 1 of Digester 1. She stated that the crew was having some difficulty due to solids buildup within the mixer shaft.

Repair of Expansion Joints

The AOC signed on September 19, 2018, also requires Big Ox to address cracks and leaking expansion joints on the digesters. Mr. Hensley asked Ms. McCaslen about these repairs, and she told us that the repairs had been made. Mr. Hensley asked if the facility had conducted an analysis to assess why the expansion joints had failed. Ms. McCaslen responded that the facility still had concerns regarding the seal between the wall and roof sections. Mr. Hensley asked if any monitoring of the expansion joints occurs. Ms. McCaslen told us that the expansion joints are beneath a false roof and obscured, and therefore difficult to inspect. She said that sometimes the roofing material "bubbles up."

Pressure Relief Valve (PRV) Repair

Mr. Hensley asked about the status of PRV repairs and/or replacement required under the AOC dated September 19, 2018. Ms. McCaslen said that the facility was working to set a date for a contractor to evaluate the PRVs.

As described in the AOC dated September 19, 2018, several digester process upsets have occurred at the facility, resulting in overflow of partially digested organic material and water from the digesters. Regarding these overflow events, I asked if problems had arisen from

exposure of the digester PRVs to the overflow material, also referred to as "foam" by the facility. Ms. McCaslen told us she was not sure, but that the facility had contacted the PRV vender to inquire about any consequences if foam would enter the PRVs. Also, Ms. McCaslen told us the facility was working with the vendor to identify appropriate preventative maintenance and inspection of the PRVs. She said that Big Ox personnel had been conducting visual inspections of the PRVs, but she was working to determine if persons inspecting the PRVs should have particular certification or if the facility should hire a contractor to perform the inspections.

System Monitoring

Mr. Hensley and Mr. Morton asked Ms. McCaslen various questions regarding monitoring of the digesters and biogas skid. Ms. McCaslen displayed a DCS screen to demonstrate the continuous parametric monitoring system (CPMS) installed ahead of the biogas skid (EP07) per III.(A)(3)(k) of the facility's NDEQ air quality construction permit CP17-033. Mr. Morton asked if the facility had records of calibration or other quality assurance/quality control (QA/QC) performed on the CPMS. Ms. McCaslen told us that Big Ox staff were attempting to determine if calibration is possible given the location of the monitor, and stated that currently the facility compares its CPMS data to data provided by the CPMS that Northern Natural Gas operates on the outgoing pipeline.

Ms. McCaslen showed us spreadsheets from November 2018 of Biogas 5000 readings taken twice per shift from the digesters, tracking hydrogen sulfide, methane, oxygen, and carbon dioxide. Mr. Morton noted that hydrogen sulfide readings fluctuated, but that several readings exceeded 1,500 ppm.

Regarding a bypass exhaust cited in an NDEQ Notice of Violation from November 7, 2018, Mr. Morton asked if records had been kept of when this exhaust was used and if an SOP or similar guidance is in place that describes conditions under which the bypass must be utilized. Ms. McCaslen told us that a log sheet is kept in the biogas skid control room documenting times/dates that the bypass exhaust is used, and that the facility will continue to record this information until a flow meter is installed on the bypass exhaust.

Management of Change (MOC)

Mr. Hensley asked how the facility addresses MOC. Ms. McCaslen told us that the facility has no formalized MOC procedure, but that changes to facility processes are tracked in work orders and are discussed in email exchanges among facility personnel.

FACILITY WALK-THROUGH

On November 13, 2018, at approximately 2:30 p.m., Mr. Hensley, Mr. Morton, and I accompanied Ms. McCaslen, Mr. Jody Anderson, and Mr. Elijah Anderson on a walk-through of the facility that included observation of the receiving bay area from an overlooking observation room/office, the roofs of the digesters, and the biogas skid. During the site walk-through, Mr. Hensley took 74 photographs using an intrinsically safe digital camera. The 74 digital photographs are in Folder 3 of the CD, and selected photographs are presented in a photographic log in Attachment 3.

The following summarizes observations of the walk-through:

Receiving Bay

From the overlooking observation room, we observed receiving bay operations as a tanker truck arrived and unloaded material to the receiving pit (see Attachment 3, Photograph 1). The receiving bay entry door to the outside was left open during the unloading operation. We observed that the receiving bay is connected to the warehouse area by one bay door and one pedestrian door; both were closed during the unloading operation that we observed.

As we watched the truck being unloaded, we observed a Big Ox employee open a hatch on top of the tank trailer, after which the back main valve of the tank trailer was opened, and high-strength waste emptied from the truck and flowed past a floor grate and into a sub-floor receiving pit. An employee collected a grab sample from the flowing material by use of a cup fixed to an extension handle. We did not observe any employees involved in the truck unloading wearing respiratory protection; however, they were wearing personal four-gas monitors.

In the receiving bay observation room/office, we observed Industrial Scientific RADIUS-BZ1 gas monitor docking stations, calibration gases, and extra RADIUS-BZ1 monitors (see Attachment 3, Photograph 2). Mr. Hensley asked how often the monitors are calibrated. Ms. McCaslen told us calibration occurs each time the monitors are brought into the office for recharging. Mr. Hensley asked about negative readings among monitoring data he had observed. Ms. McCaslen said she was not sure what had caused the negative readings.

Roof of Digesters

We then went onto the roof. The roofs of Digester 1, Digester 2, and portions of the facility building adjoin to form a continuous roof surface.

Ms. McCaslen pointed out the HVAC exhaust point from the receiving bay, approximately 15 feet from the northernmost digester PRV. As we were observing the HVAC exhaust point, Mr. Morton noted that his RAE Systems QRAE3 monitor alarmed and showed a peak hydrogen sulfide concentration of 13.6 ppm.

We observed repairs in progress on Mixer 1 of Digester 1, noting a hoist and open mixer port (see Attachment 3, Photograph 3). Ms. McCaslen said that she expected the mixer to be brought online soon.

We observed several PRVs for the digesters. They are approximately 6 feet tall and release directly to the atmosphere (the PRVs are not equipped with any exhaust piping that would convey releases above the breathing zone of a person standing on the roof) (see Attachment 3, Photographs 4 and 7). A wind sock was on roof of the receiving bay.

The reinforced concrete digester roofs are covered with black membrane material. Along the east edge of Digester 1, we observed that the membrane was raised in some areas (see Attachment 3, Photograph 5).

Ms. McCaslen told us that a foaming event/spill had occurred during the previous week. We observed closed roof hatches with cement blocks and other materials stacked on them, presumably to keep them closed during foaming events. We also observed some remnant solid waste material on the roof that appeared to be related to an overflow from the south hatch of Digester 1.

While on the roof, Ms. McCaslen pointed out continuous air monitors (Industrial Scientific RADIUS gas meters) at various locations around the property.

Ms. McCaslen told us that the facility uses Biogas 5000s to measure methane, hydrogen sulfide, carbon dioxide, and oxygen twice per shift at sampling ports on the two vertical sections of biogas headers from each digester (four ports total), and from a combined biogas sampling port on the horizontal section of the header near the easternmost part of Digester 2 (see Attachment 3, Photograph 6).

Ms. McCaslen showed us the easternmost expansion joint of Digester 2 that had been repaired. Mr. Hensley noted a small amount of vapor escaping the junction of the repair and the south wall. Ms. McCaslen told us that additional repair would be necessary (see Attachment 3, Photographs 8, 9, and 10).

Ms. McCaslen pointed out cleanout ports that had been installed at the south-to-west bend of the biogas header so that high-pressure water could be injected to clean the header if foam would reach the header. Insulation had not been replaced on this elbow.

Odor Control Scrubber and Ferric Chloride Tank

After our observations on the roof, we walked back through the facility and outside toward the gas skid. On the way to the gas skid, Ms. McCaslen pointed out the odor control scrubber (EP14) on the west side of the facility building. Mr. Morton asked about rust-colored staining on the exteriors of the odor control scrubber (EP14) and the adjacent ferric chloride storage tank (see Attachment 3, Photograph 12). Ms. McCaslen told us that the staining had resulted from an overfill event during a delivery of ferric chloride. She said that the ferric chloride tank level gauge had not been reading accurately when it had been checked before offload of the ferric chloride into the tank, and that the delivery had exceeded tank capacity and overfilled the tank. Ms. McCaslen told us that ferric chloride is added to the digesters for odor control, and that addition rates are based on Biogas 5000 hydrogen sulfide readings.

Ms. McCaslen told us that air from the dissolved air flotation (DAF) area (also known as the gas emulsion, or GEM area) and holding tanks is routed through the odor control scrubber. She stated that exhaust from the scrubber is monitored weekly by use of a handheld hydrogen sulfide meter. She showed us handwritten logs of this monitoring; all logged readings indicated 0 ppm of hydrogen sulfide. Mr. Henley noted that the exhaust exits the scrubber about 100 inches off the ground.

Biogas Cleanup Skid

At the gas skid, we met Mr. John Gutierrez, the gas skid operator who was on duty. Mr. Gutierrez pointed out the main components of the skid and answered questions (see Attachment 3, Photographs 13 and 14).

Mr. Morton requested to view the bypass exhaust log sheet to which Ms. McCaslen had referred during the opening interview. The handwritten log was kept by Mr. Gutierrez and showed time periods, dates, and biogas parameters at times when the bypass exhaust was utilized. The first entry in the log was dated September 12, 2018. More than 20 occurrences of use of the bypass appeared to have been logged. Mr. Morton asked if using the bypass exhaust is a permanent part of the process or if this was a temporary measure until facility operations have stabilized. Ms. McCaslen stated she believed this is a permanent part of skid system startup and flare startup processes. Mr. Morton asked for an SOP or similar documentation that would reflect this. Such documentation was not provided during the inspection and was added to the list of requested documents.

Mr. Gutierrez pointed out the bypass exhaust on the north part of the skid, approximately 10 feet off the ground and under a larger biogas pipe. The vent line was open, with a steel blind hanging from the bottom two bolts of the end flange (see Attachment 3, Photograph 14). Mr. Hensley asked Mr. Gutierrez how the vent line was utilized. He told us that when the gas skid starts, it needs a certain pressure in the stripper column, and to achieve this pressure, the bypass exhaust must be opened. Mr. Hensley asked if an SOP had been established relating to the bypass exhaust. Mr. Gutierrez responded affirmatively, but said that he did not have the SOP available while we were at the gas skid.

Mr. Gutierrez pointed out two gas monitoring locations at the gas skid—one near the bypass exhaust and one near the stripper column to the south.

Mr. Hensley asked Mr. Gutierrez how he responds when an alarm activates at the gas skid. He told us that when an alarm activates related to quality of biomethane proceeding to the pipeline, he has 15 minutes to correct the parameter that could cause rejection from the pipeline company. He said that he can adjust water and air flow rates to attempt a correction, but if the problem cannot be corrected within 15 minutes, the gas skid must be shut down and biogas is then routed to the flare.

GENERAL DUTY CLAUSE

Section 112(r)(1) of the CAA requires that owners and operators of stationary sources identify hazards that may result from accidental releases by application of appropriate hazard assessment techniques, design and maintain a safe facility and take necessary steps to prevent releases, and minimize effects of accidental releases that occur whenever extremely hazardous substances are present at their facilities. Section 112(r)(1), known as the General Duty Clause, states that:

> Prevention of Accidental Releases (1) Purpose and General Duty- It shall be the objective of the regulations and programs authorized under this subsection to prevent the accidental

release and to minimize the consequences of any such release of any substance listed pursuant to paragraph (3) or any other extremely hazardous substance. The owners and operators of stationary sources producing, processing, handling or storing such substances have a general duty, in the same manner and to the same extent as section 654, title 29 of the *United States Code*, to identify hazards which may result from such releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.

During the inspection, we compared the requirements of the General Duty Clause with information obtained during the inspection. We noted that hydrogen sulfide is an extremely hazardous substance and that during the unloading incident on August 28, 2018, a Big Ox employee was exposed to hydrogen sulfide and became nauseous, requiring observation and treatment at a hospital. We also noted that on several occasions, air monitoring in the receiving bay had indicated hydrogen sulfide concentrations exceeding its NIOSH IDLH level of 100 ppm, and that OSHA defines IDLH as the "level that interferes with the ability to escape."
Mr. Hensley also pointed out that the facility had not maintained as-built drawings, and that the facility had no formalized MOC program. Based on this information obtained during the inspection, Mr. Hensley identified the following preliminary finding.

1. **The facility had failed to design and maintain a safe facility by not maintaining as-built drawings, having no formalized management of change program, not preventing exposure of employee to hydrogen sulfide, and not controlling methane and hydrogen sulfide in and outside of receiving bay as required by Section 112(r)(1) of the Clean Air Act (CAA).**

CLOSING CONFERENCE

At the end of the inspection, Mr. Hensley reviewed the preliminary finding with Ms. McCaslen and Mr. Jody Anderson. Mr. Hensley also reviewed the list of requested information and documents, and Ms. McCaslen provided him a copy of the list she had compiled. Ms. McCaslen told us that she would forward the list to her corporate staff and that the information/documents would be provided within 7 days (by November 20, 2018). Mr. Hensley explained that findings could be identified via post-inspection review of information obtained during the interview or from review of information or documents provided by the facility. Mr. Hensley prepared a Receipt for Samples and Documents form (see Attachment 1), which identified the digital photographs obtained during the inspection. Mr. Hensley then filled out the Notice of Preliminary Findings form (see Attachment 1) and provided it to Ms. McCaslen for review and signature.

We departed the facility at approximately 10:45 p.m. on November 14, 2018.

Following the inspection, I spoke with Mr. Hensley, and he told me that as of December 13, 2018, EPA had not received any of the information or documents requested and itemized on the list of information/documents requested (see Attachment 2).

This report concludes the inspection activities regarding the Big Ox facility in Dakota City, Nebraska.

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Robert Monnig
Compliance Inspector

ATTACHMENTS

1 – Inspection Forms and Checklists
2 – List of Requested Documents
3 – Photographic Log
4 – CD – Attached to Report

Attachment 1
Inspection Forms and Checklists

US ENVIRONMENTAL PROTECTIONS AGENCY
WASHINGTON, DC 20460
Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III)
Clean Air Act Section 112r

NOTICE OF INSPECTION

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE	INSPECTOR NO.	DAILY SEQ. NO.	Big Ox Energy Siouxland LLC
	Dave Hensly	1	

3. INSPECTOR ADDRESS	4. FIRM ADDRESS
U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 7, AWMD/CRIB 11201 RENNER BLVD. LENEXA, KANSAS 66219	1616 D Ave, Dakota City, NE 68776

REASON FOR INSPECTION

This inspection is for the purpose of determining compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, and the Clean Air Act (CAA) of 1990 Section 112r. The scope of this inspection may include but is not limited to: reviewing and obtaining copies of documents and records; interviews and taking statements; review of manufacturing, importing, processing, use, and/or waste treatment facilities; taking samples and photographs; and other inspection activities necessary to determine compliance with the EPCRA and the Clean Air Act.

INSPECTOR SIGNATURE		RECIPIENT SIGNATURE	
Dave Hensly		Dusin McClain	
NAME		NAME	
Dave Hensly		Disiree McCaslin	
TITLE	DATE SIGNED	TITLE	DATE SIGNED
Physical Scientist	11-13-2018	Compliance Director	11.13.18

US ENVIRONMENTAL PROTECTIONS AGENCY
WASHINGTON, DC 20460

Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III)
Clean Air Act Section 112r

RECEIPT FOR SAMPLES AND DOCUMENTS

1. INVESTIGATION IDENTIFICATION			2. FIRM NAME
DATE	INSPECTOR NO.	DAILY SEQ. NO.	Big Ox Energy Siouxland LLC
	Dave Hensly	1	

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☐ The documents and samples of chemical substances and/or mixtures described below were collected in connection with the administration and enforcement of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

☒ The documents and samples of chemical substances and/or mixtures described below were collected in connection with the administration and enforcement of the Clean Air Act (CAA) of 1990.

RECEIPT OF THE DOCUMENT(S) AND/OR SAMPLES(S) DESCRIBED IS HEREBY ACKNOWLEDGED:

NO.	Photos	DESCRIPTION
1	Receving bay from Cntrl room	42-43 O1 + O2 Monitor
2	Monitoring Docking Stations	44 Shadow Picture
3-5	Digester 1 North Monitor	45-46 O1 South End
6-8	O1 N Monitor + O1 NPRV	47 NE Air Monitor
9-10	O1 Mixer 1 + PRV	48-49 O1 looking North
11-13	O1 Looking South	50-53 Oder Control Air Scruber
14-15	Wind Sock	54 Ferric Oxide tank
16-17	Receving Bay Air Handler	55-56 Oder Control Piping
20-21	Sampling Port O1 North	57-58 Mustard Seed + Polymer
22	Mixing tank Hatch	59-60 Gas Skid Vent and Sample Port
23	Sampling Port O1 Middle	61-63 H_2S Scrubber
24-26	O1 + O2 Joint Monitor	64-65 NE Air Monitor
27-28	Clean Bort Ports	
29	South End O1 Y Overplow	
30-31	Sampling Port O2 East	
32	O2 East PRV	
33	O2 Expansion Joint Repair	
34	Thermal of O2 Expansion Joint Repair	
35	Thermal + Visual of O2 Expansion Joint Repair	
36-38	Sampling Port Composet	
39-40	O2W PRV + Monitor	
41	O2 Expansion Joint Repair	

Chemical identities for underlined items have been claimed as trade secret. The facility official requesting such treatment has read and understands EPCRA Section 322 and pertinent trade secret regulations and understands EPCRA 325, which provided for (among other things) penalties for frivolous claims. Confidential documents claimed under CAA will be handles under 40 CFR 2; subpart B.

OPTIONAL:
DUPLICATE OR SPLIT SAMPLES: REQUESTED AND PROVIDED ☐ NOT REQUESTED ☐

INSPECTOR SIGNATURE	RECIPIENT SIGNATURE
Dave Hensly	Desiree McLaslen
NAME: Dave Hensly	NAME: Desiree McLaslen
TITLE: Physical Scientist	DATE SIGNED: 11/14/2018
TITLE: Compliance Director	DATE SIGNED: 11.14.18

NOTICE OF PRELIMINARY FINDINGS

FIRM NAME: Big Ox Energy Siouxland LLC **RMP/TRI NO:**

FIRM ADDRESS: 1616 D Ave,

Dakota City, NE 68776

INSPECTOR: Dave Hensley **DATE:** 11/13-14/2018

An inspection of the above facility has just been completed. The purpose of the inspection was to determine compliance with the requirements of the Clean Air Act Section 112r and Emergency Planning Community Right-to-Know Act. The following potential violations were identified:

	CITATION	DESCRIPTION
1	CAA 112(r)(1)	Failure to design and maintain a safe facility by not maintaining as built drawings, having no formalized Management of change Program, not preventing exposure of employee to hydrogen sulfide, and not controlling methane and hydrogen sulfide in and outside of receiving bay.

This Notice is provided to call your attention to those areas of potential noncompliance at the earliest possible time. This Notice does not constitute a Notice of Violation, Order, or Civil Action pursuant to the Emergency Planning Community Right-to-Know Act of 1986 (SARA Title III) or Section 113 of the Clean Air Act (CAA), and may not be a complete listing of all violations which may be identified as a result of this inspection.

You are encouraged to take corrective action to address these preliminary findings. Please submit the actions you take and/or a schedule of the actions to EPA in writing as soon as possible.

Dave Hensley Phone: 913-551-7768

U.S. Environmental Protection Agency
11201 Renner Blvd.
Lenexa, Kansas 66219

Corrective actions you have taken may be considered in any subsequent U.S. EPA enforcement follow-up, to the extent allowed by Agency regulations, guidance, and policies.

The undersigned hereby acknowledges receipt of a copy of this Notice.

PRINTED NAME: Desiree McCaslen

TITLE: Compliance Director

SIGNATURE: Desiree McCaslen DATE: 11.14.2018

The EPA Region VII Pollution Prevention Team can help you identify pollution prevention and waste reduction opportunities. For more information, email: rivas.marcus@epa.gov

REGION 7 U.S. ENVIRONMENTAL PROTECTION AGENCY
CHECKLIST FOR GENERAL DUTY INSPECTION UNDER CAA 112(R)

Instructions. ***For each question answer by checking Yes (Y), No (N), or Not Applicable (NA). Each question is paraphrased from the regulation. For every point of clarification or incident of violation list the evidence supporting it in the comment field.***

GENERAL FACILITY INFORMATION

1. Facility Name:	Big Ox Energy Siouxland LLC
2. Mailing Address (Street, City, State, Zip):	530 S. 13th Street, Suite 100, Lincoln, Nebraska 68508
3. Physical Address or location description (Street, City, State, Zip):	1616 D Ave, Dakota City, NE 68776
4. Latitude: Longitude: Where Taken:	42°26'7.83"N 96°25'24.64"W Front Gate
5. County:	Dakota County
6. Facility Contact:	Jody Anderson / Desiree Mccaslen
7. Facility Contact Phone Number:	920-615-1261
8. Facility Contact E-mail:	Janderson@bigoxenergy.com
9. Website (optional):	http://bigoxenergy.com/
10. **List** and **Describe** all Processes and indicate which are being inspected or audited:	Biogas production via anaerobic digestion
11. Facility History	

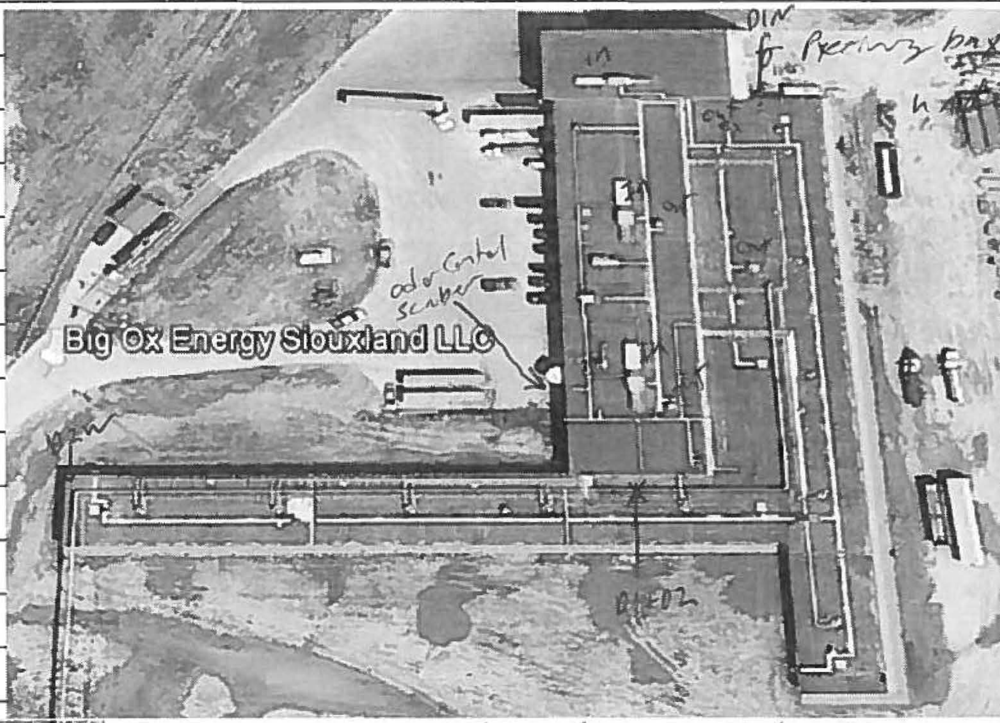
Arrive: 13:00 11/13/18 Leave: 16:30 11/13/2018 Arrive: 8:05 11/14/2018 Leave: 11:00 11/14/2018

Denied next Wednesday

Facility/Process: Big Ox Energy Siouxland LLC

Walk me through the process starting at the injection of methane into the pipeline to the truck unloading?

5le Apmed
feed Stock
generators



hand mix
direct unload
2 13,000 Storage tanks
2 2 m gallon [illegible]
series
8 [illegible]
Cylinder + [illegible]
Solid liquid
liquid mixed
of industrial
sources

Gas compressed sent to the gas std. the headers
Two pressure system on header transport
line system, # of pressure sensors
18" H_2O Pressure relief.
normal operation 18.5 - @ 10.5 19.1 Feet
At IC53 = H_2S monitoring may not be calibrated.
1.24 ppm Error on At IC53 -
304 scfm

GENERAL Applicability				
Parameters	**Y**	**N**	**NA**	**Comment**
§68.10(a) – Is the facility a stationary source with more than a threshold quantity of a regulated substance in a process per §68.115?				Indicate process, substance and quantity for this audit/inspection:
§68.10(b)(3) – Have emergency response procedures been coordinated with local planning and response organizations?				Verified with LEPC/FD contact (name):
§68.10(d)(1) - Does the facility have a listed NAICS code(s)?				
§68.10(d)(2) - Is facility subject to OSHA PSM?				

What is the program level for this process?	**Non-Filer** No to §68.10(a)	**Program 1** Yes to §68.10(a) and §68.10(b)(3)	**Program 2** Yes to §68.10(a and neither Program 1 or Program 3	**Program 3** Yes to §68.10(a) and eith of §68.10(d)(1 or 2)

Facility/Process: Big Ox Energy Siouxland LLC

What happened on August 28, 2018?

new hire 18 - Safety trainy took 4 gas unloaded truck
4 gas on table in lunch room - left area - not emitted.
Fluids - nurse to relived at duties. - Copy of training needed
copy of incident investigation. 4 gas meter required.

Provide documentation of personal protective equipment violation by the injured employee.

Provide the operating procedure being followed by injured employee at 02:30 AM August 28, 2018.

What medical treatment received as a result of the 02:30 AM August 28, 2018 incident?

Blood Draw, Fluids, Treated + released - Local Emergency Room

HAZARD IDENTIFICATION				
	Y	N	NA	COMMENT
Have the owners/operators completed Process Hazard Analyses (PHA) or Hazard Review (HR) for each process involving extremely hazardous substances (EHSs)?				
Did the owner/operators use appropriate hazard assessment techniques?				What-if What-if/Checklist Checklist HAZOP FMEA Fault Tree
Are the PHA/HR complete, accurate, correct and do they				
Identify the intrinsic hazards of the substance and process?				MSDS
Identify the potential releases from the process?				
Identify the potential impacts on the public and the environment?				What modeling program? (ARCHIE, ALOHA, RMP*Comp, Degadis)
Are these impacts realistic, accurate, and correct?				Environmental conditions?
Technology of the Process:				
Maximum intended inventory?				
Safe upper and lower limits for temperatures, pressures, flows, etc.?				
Evaluation of consequence of deviation?				

Facility/Process: Big Ox Energy Siouxland LLC

Time	H2S (PPM)	What was happening in the receiving area on;
10/13/2018 2:23 PM	146.70	10/13/2018 2:23 pm
10/13/2018 2:23 PM	195.30	
10/13/2018 2:23 PM	182.60	
10/13/2018 2:23 PM	162.80	
10/13/2018 2:23 PM	133.80	10/16/2018 3:34 pm
10/13/2018 2:23 PM	107.80	
10/16/2018 3:34 PM	135.00	
10/21/2018 12:59 PM	111.60	
10/22/2018 3:47 PM	248.90	10/21/2018 12:59 pm →
10/22/2018 3:47 PM	315.20	
10/22/2018 3:47 PM	216.50	
10/22/2018 3:47 PM	141.50	
10/22/2018 3:48 PM	109.60	–10/22/2018 3:47 pm -> Daily logs
10/22/2018 3:48 PM	108.90	Hind sht [redacted] (CBL
10/24/2018 9:13 AM	123.10	ventilation unit - hooked up
10/24/2018 9:13 AM	131.00	- alarm tied to LEL System
10/24/2018 9:13 AM	114.60	10/24/2018 9:13-15 am Trial + Error
10/24/2018 9:14 AM	137.10	Bill of lading - Feed stock w/ H_2S
10/24/2018 9:15 AM	111.10	water SOP to Rec Plex tanks.
10/24/2018 9:15 AM	111.30	
10/26/2018 3:03 PM	115.10	10/26/2018 3:03-05 pm
10/26/2018 3:03 PM	133.40	
10/26/2018 3:04 PM	102.70	
10/26/2018 3:04 PM	108.40	
10/26/2018 3:05 PM	111.70	10/27/2018 2:21-24 pm?
10/26/2018 3:05 PM	103.60	
10/27/2018 2:21 PM	146.10	
10/27/2018 2:22 PM	151.20	
10/27/2018 2:23 PM	104.60	
10/27/2018 2:23 PM	102.20	
10/27/2018 2:24 PM	101.30	

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Design:				
Are design documents for each process correct, accurate, and current?				
Do designs minimize risks of releases based on PHA/HR?				
Evaluation of design documents:				
Are design codes identified and appropriate for the process?				
Was facility constructed or modified according to design specifications?				
Are there quality control procedures to ensure construction materials meet design specification?				
Do critical process component have redundant systems installed?				
Has the facility design been updated to current codes and standards?				Which standards?
Are there remote monitoring and remote control capabilities for dealing with upsets?				Monitor calibration ppm?

P&ID drawings for the clean-up skid (PID 14) and flare (PID 16), engineering design was intended to include a knock out drum (VS003) with a demister with the exhaust conveyed to the flare for normal operation. Why were these not installed?

P&IDs not updated

No MAC program use envl.

Is there a H2S monitor at the front end of the clean up skid? Yes Biogas 5000 = Hatch Ltd

Do you have a speck sheet for that monitor? – sold w/ unit

Range

Span

~~Calibration~~

Maintenance

Location of H2S monitor (assigned SCADA descriptor AT1CS3)?

Flare bypass?

RAGAGEP? for Mixers? for Digester? for Flare? 5 mixers design

D1 has 3 functional mixers 1 & 2 down.

Feed stock control.

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Maintenance:				
Are there preventive maintenance procedures to ensure the mechanical integrity of the process equipment?				
Do maintenance procedures and preventive schedules follow generally accepted engineering practices?				
Are maintenance personnel trained on hazards of the chemicals, the process and in maintenance procedures?				
Does training include understanding and proficiency evaluations?				Means to verify understanding? Written tests, oral, demonstration?
Is there a maintenance supplies and parts inventory that corresponds with maintenance schedules, especially for critical components that affect process safety?				
Is there a quality control program to ensure spare parts meet specifications, and is it implemented and working?				Means to verify understanding? Written tests, oral, demonstration?
How has the facility minimized the possibility of an unauthorized entry?				Means to verify understanding? Written tests, oral, demonstration?

Mixer 1 on Digester 1? Not in Service
mixer lab. analyzed weekly for
balance alkalinity
Motor Heads Set.

Do you have a maintenance plan or procedure?

How do you determine when to inspect equipment?

If a issue is found during an inspection, what is the process for getting it repaired?

CMMS - Main
Maintenance Program Document

Expansion Joints?

Is there a plan to maintain/monitor expansion joints?

-Same Wsual

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Operations:				
Are there Standard Operating Procedures (SOPs) for each process?				
Do SOPs cover each phase of each process?				
Initial Startup				
Startup				
Normal Operations				
Shut Down				
Emergency Shutdown				
Emergency and Temporary Ops				
Startup after Emergency shutdown				
Consequences of deviation and steps to correct or avoid?				
Are SOPs clear, concise, correct, and written at the appropriate level of understanding for the operator?				
Do SOPs identify upper and lower limits for operating parameters like temperatures, pressures, flows, volumes, levels, pH, concentrations, etc.?				
Do limits for parameters agree with those identified in PHA/HR?				
Are process equipment components such as valves, gauges, pumps, vessels clearly marked and agree with SOP nomenclature?				
Are SOP's revised periodically and current? Revised after incidents?				

SOP for control of solids intake?

SCADA data or log?

SCBA logs: who why + Date + time Setted in October. and the most recent results

Working in explosive range? IDLH?

Engineering Controls? In receiving bay?

SOP for use of flare bypass?

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Training:				
Are employees trained and tested for competence on the safe operating procedures for the process they operate?				How tested?
Is training adequate?				How much, How often?
Are employees trained on the intrinsic hazards of the substance and the process and the consequences of deviation from the limits for process parameters?				
What is the frequency of training?				
Are there communication procedures to ensure that instructions given are clear and understood correctly (i.e. "repeat back" the instructions)?				
Are employees trained to recognize emergency situations?				
Are they authorized to take actions to prevent them or mitigate them?				
Does training reflect current operations?				

Facility/Process: Big Ox Energy Siouxland LLC

Respiratory Program Training?

Biss
Mustard Seed polymer? tanks

Site visit 9/12/2018

- Operating manages manage set points — log of vent quality

- Gas Skid Operator

John Gutierrez — gas cleaning skid operator — Startup SOP?

Photo

1 Receiving bay from Control Room
2 Monitoring Dock Status
3 D1N Monitor
4 D1N Monitor
5 D1N Monitor
6-8 D1N Monitor + PRV 1
9-10 D1 mixer 1 + PRV
11-13 D1 ~~dome~~ looking South
14-15 Land Sock
16-19 Receiving bay air handler
20-21 Sampling port North
22 - Mixing tank hatch
23 - Sampling port 2 from north
24-26 D1 + D2 Ocmt monitor
27-28 Clean out port.
29 South end D1 w/ scene over flow
30-31 Sampling port D2 Easte
32 PRV D2 East
33 D2 Seam Repair
34 Thermal Seam Repair Reveal
35 Thermal + Image Seam Repair
36-38 Sampling Port - ~~D2 West~~ Compost
39-40 PRV - + DE East Monitor
41 - ~~Hatch~~ D2 Seam Repair
42-43 D1 D2 monitor
44 - extra shadow pic
45-46 D1 South
47 - NE Monitor
48-49 D1 North
50-53 Odor control
54 - ferric oxide tank
55-56 odor control piping
57-58 Mustard Seed + Polymer
59-60 Gas Skid ladder / vest
61-63 H_2S Scrubber
64-65 NE monitor

- vent measured in operator logs -
- mixer 1 in or not operating but maybe
- PRV - are PRVs okay with foam

Person had not seen GPC Identification Hazard.

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Managing Change:				
When changes in the process are planned, are they evaluated as to how these changes will affect the hazards identified in PHA/HR?				
Hazards				
Materials of Construction				
Operating Procedures				
Maintenance Procedures				
Prevention Programs				

Facility/Process: Big Ox Energy Siouxland LLC

What happens when a process change needs to be made?

No Formal MOC Program in place

No metal-ordering gear — on just made to pipeline

FACILITY DESIGN and MAINTENANCE				
	Y	N	NA	Comment
Incident Investigation:				
Does the facility investigate incidents resulting in catastrophic releases within 48 hours?				
Does the team contain at least one person knowledgeable in the process?				
Does the investigation report contain:				
Date of incident?				
Date the investigation began?				
Incident description?				
Factors contributing to incident?				
Recommendations?				
Is there a system to promptly resolve and document resolution of the report findings?				
Are findings evaluated to ensure that any new information is included in PHA/HR reviews, SOP's, and maintenance programs?				
Self Audits:				
Does owner/operator practice self-auditing of the facility's prevention program?				
Is it done by a third party?				

Was an investigation into the August 28, 2018 injury done?

Yes Interviews Corrective act. -

CONSEQUENCE MINMIZATION				
	Y	N	NA	Comment
Planning:				
Has the owner/operator developed an emergency response plan that specifically addresses release scenarios developed from the PHA/HR and historical information?				
Does the plan identify potential release scenarios and their potential impacts on the public and the environment?				
Is there an emergency response plan to respond to emergency situations based on the accidental release scenarios?				
Does the plan clearly identify responsibilities, functions, and contacts for emergency response?				
Does the plan include coordination with local emergency responders?				LEPC/FD?
Are employees trained on emergency response actions?				
Are routine exercises conducted to practice emergency response?				
Is the emergency response plan reviewed and revised as the process changes?				

Facility/Process: Big Ox Energy Siouxland LLC

Release monitoring?

Is leak detection part operator rounds? Is there a police that covers what to do when a leak is found?

Pressure Drop in the control facility monitoring
Daily rounds - visual inspections to observe.
Shift change walk Rough multiple times
- Computer access.
- lead operator notes. → Shift notes
operators status I PAD - Change problems
communication to lead 1 lead 1 open pf shift
- Days now on shift 2 receiving bay techs.
-

How do you know if there is a release of biogas?

Where are current monitors?

NW Fence - Lat. _____ Long. _____

NE Fence - Lat. _____ Long. _____

SE Fence - Lat. _____ Long. _____

Receiving West - Lat. _____ Long. _____

Receiving East - Lat. _____ Long. _____

Digester Junction - Lat. _____ Long. _____

Digester 2 West End - Lat. _____ Long. _____

Digester 1 North End - Lat. _____ Long. _____

OBLIGATIONS UNDER THE GENERAL DUTY CLAUSE			
	Y	N	Comment
Has the owner/operator identified hazards, which may result from accidental releases using appropriate hazard assessment techniques?			
Has the owner/operator designed and maintained a safe facility taking such steps as are necessary to prevent Releases?			
Has the owner/operator minimized the consequences of accidental releases that do occur?			

Date of Inspection/Audit	11/13-14/2018
Inspector/Auditor Name and Affiliation	Dave Hensley US EPA R7
Inspector/Auditor Signature	Dave Hensley

Other Questions

1. Does BOE have a best management practice (BMP) plan for work performed on site? Is staff aware of the plan? How is it used?

2. Describe environmental mitigation efforts/procedures used at the site? (i.e., prevention of AD overflow to storm water drains, etc.).

3. Historical record of H2S control media scrubber bypass valve (around H2S control media scrubber and to biogas scrubber) open/close position. This may include a historian from SCADA. Note that this is different than the flare bypass which you already include in the form.

4. Confirm bypass around H2S control media scrubber connects upstream of H2S meter currently claimed to be located in front of biogas cleanup skid.

5. Design of H2S control media scrubber. Media adsorption capacity? Flow rate? How many times has media been replaced?
- Receiving bay not hooked up.

6. Description of receiving process, equipment used during unloading and mitigation of H2S gases in receiving area. What controls ventilation air inside receiving area? How many air changes per hour is the system designed to meet? What concentrations of H2S was the system designed to control?

7. Design of odor control scrubber. Media adsorption capacity? Flow rate? How many times has media been replaced? - not yet
heatley Air Exogt 4gas mtr

8. How often is Ferric Chloride used? What determines dosage quantities? Confirm tank has a secondary containment dike. 12gallons an hour double walled
odor control raw feed pump runs dosing determined by Biogas 5000 - Balance gas

9. How quickly is the facility capable of switching to one digester operation? Days, weeks? What are the procedures to accomplish this? O_2 - Methane - H_2S -

10. Can digester exhaust for AD1 and AD2 be split for post processing? For example, can one digester exhaust be directed to the flare while another to the biogas clean up skid? ~~Yes~~ Yes, No

11. Has BOE ever turned down a FW, HSW or any other received load from a client? If so, why? How many times has this happened? What tests are performed by BOE staff for received loads? Yes Documentation
pH-Temperature-Sampling results or odor

12. For maintenance procedures, I am especially interested how often they calibrate or maintain pH, Temp, etc. meters associated with digester operations. 2 full time lab techs. 3x a day Grab samples 3 locations

13. How does BOE maintain ductwork and joints to the flare and biogas clean up skid? How does BOE test for leaks? If leaks are identified, how are they fixed? How quickly are they fixed?

14. Are all digester mixers in operation? If not, identify which ones are not.

15. Are storage tanks upstream of the digester equipped with odor control systems? Are tanks sealed and vents directed to odor control skid? Does BOE monitor draft for tanks equipped with odor control?

16. What is the operating %TS inside the digester? How does it compare to historical values? - Force a mark. TS VS BOD -

17. What is the operating %TS post dewatering? How does it compare to historical values?

18. What is the feed solids rate (lbs/hr), feed solids concentration (%TS) and feed solids volatile solids concentration (%VS) to the digester? How does it compare to design values and historical operating values?
October report 8796 Pounds 1000 gallons - Flow meter

19. How does %received waste of total waste fed to the digester compare to design values? Both in terms of rate (lbs/hr) and %VS. and 240,000 gallons at capacity
10 tons a day Sld:

Attachment 2
List of Requested Information and Documents

11.14.2018 Updated from 11.13.2018 EPA site visit

Participants:

Kyle Morton DEQ
Rob Monnig, PE
Dave Hensley, EPA
Jody Anderson, Plant Manager
Desiree McCaslen, Compliance Director
William Guerry, Kelley Drye, BOE Legal Consultation
Ted Sommer, Safety Director, BOE

Site visit and inspection for the facility gas monitoring and site evaluation under the Clean Air Act.

- Documents requested and CBI-five days to think about it and submit it. 15 days to respond to this.
- P and ID's for the facility. I am pretty sure that we have already provided these as part of the AOC-determined that this is not available and no longer requested as part of this inspection EPA has these docs.
- Update on the performance testing for the gas skid-BOE has a quote for this work.
    - DEQ needs to have an update on the CEMS requirement and modify the permit to reflect and go with something completely different. Immediate notification to DEQ.
- Update on the pressure relief valve testing, calibration, and engineering review of their location for operational efficiency.-BOE has a quote for this work.
- Update on engineering review of facility operational capacities and plant operation with the two non-functioning mixers in AD1.-Part of AOC
- Request for a copy if there is one for the written program for how preventative maintenance is set up and on what frequency the maintenance if performed.
- Request for the November Digester gas and plant pH readings spreadsheet.
- Wanted to know if management of change had been implemented at the facility to make sure that all process modifications made were evaluated for their operational efficiency and safety.
- Total number of pressure sensors from biogas header through the skid operation.-This was completed during the walk through no additional information needed at this time.
- Expansion joints monitoring was brought up and EPA asked how the AD joints are monitored for structural stability to ensure that they are not leaking. -Part of AOC
    - Also asked if there was a root cause analysis conducted by a P.E. on the expansion joint failure to determine if there is a future concern for the other expansion joints. -Part of AOC
- Manufacturer of the four gas meters at the skid, the O&M manuals, and the spec sheet.-Important for the CEMS discussion (114 response?)
- Requested a copy of the incoming waste loads for the month of October, informed them that the generator would be considered CBI, but that I would check, and we could omit the generator but can list the product that was delivered.
- Log of SCBA usage date, time, reason and who.
    - Provide a log of one of these incidences to track SCBA usage during an alarm event.

- Provide a copy of the gas skid start up sheet from 9/12/2018 that tracks venting
- Gas skid start up SOP to include the venting of biogas during start up and a summary of when the vent has to be used, just for start up of the skid or also the flare?
- Monitoring records for the ambient odor control scrubber
- Ventilation in receiving is not tied to the scrubber and the IST go to the scrubber. Ventilation drawing and original design specs.
- Need to make sure that the response to the AOC had the leak in the seam seal documented and that there is a plan in place to fix the leak.
- Screen shot of the gas skid control screen from ignition
- Report generation from the 4 gas monitors at the skid or if it is capable and what it would require to get the report set up.-114 Response
- Copy of Dominick's training record (the class list), the incident report if more information exists than what was submitted to OSHA and the date that OSHA was notified.
- A copy of the 4-gas meter policy plant personnel.
- A copy of the procedure for truck unloading and how an employee knows that the truck is a potential exposure and should be handled accordingly.-May have been submitted previously but will check. Exposure levels that would trigger SCBA or evacuation of the receiving bay.
- AD1 mixer 1 is back in and will get an update on what the plan is now that the mixer is back in the digester.-AOC
- PRV operation during a foaming event-do they function properly during a foaming event and what needs to be done following to ensure that the foam did not affect the operation
- Pictures were taken while they were onsite and Dave to submit a list. They will provide a log of the pictures taken to us in the morning.
- CBI information need to be stamped and signed until it is determined
- Set points and the LEL and IDHL on the four gas meters may have been submitted but need to verify.
- Written policy that talks about material incorporation into the pit and the potential associated hazards for off gassing and employee exposure-truck unloading SOP? Verify.
- A week for the documents that I do not have access to.

Updated 11.14.2018 (highlighted and listed below)

- Balance gas on the biogas 5000 what is it reading?
- Digester design flow and loading rate.
- Most recent overflow event report. Right after the mixer repair.
- Flow monitoring out of digesters for solids removal and liquid sent to wastewater. Need to demonstrate the volume that is going to the GEM.
- Biogas flow meter calibration records, O&M manuals and what PM's are completed on those.

Photo list taken provided. No documents being provided by BOE today until the above list can be reviewed and a summary of submission put together within 7 days by 11.20.2018.

Respectfully submitted electronically 11.14.2018

Desiree McCaslen

Attachment 3
Photographic Log

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows unloading of hauled-in, high-strength waste in the receiving bay. A worker is opening the top hatch of the trailer tank.	1
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: North	PHOTOGRAPHER	Dave Hensley	11/13/2018

CASE NO. 18NE1113	DESCRIPTION	This photograph shows Industrial Scientific RADIUS-BZ1 gas monitors being charged in the receiving bay observation room/office.	2
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: N/A	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows an Industrial Scientific RADIUS-BZ1 gas monitor (left) and a hoist over a mixing port of Digester 1 being used to install a repaired mixer.	3
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: Northeast	PHOTOGRAPHER	Dave Hensley	11/13/2018

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a berm that has been constructed around a roof hatch of Digester 1 (left) to direct overflow material.	4
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: East	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows areas of the roof membrane that have raised (right). The raised areas appear to coincide with transition from the west edge of Digester 1 and the adjoining facility building.	5
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: South	PHOTOGRAPHER	Dave Hensley	11/13/2018

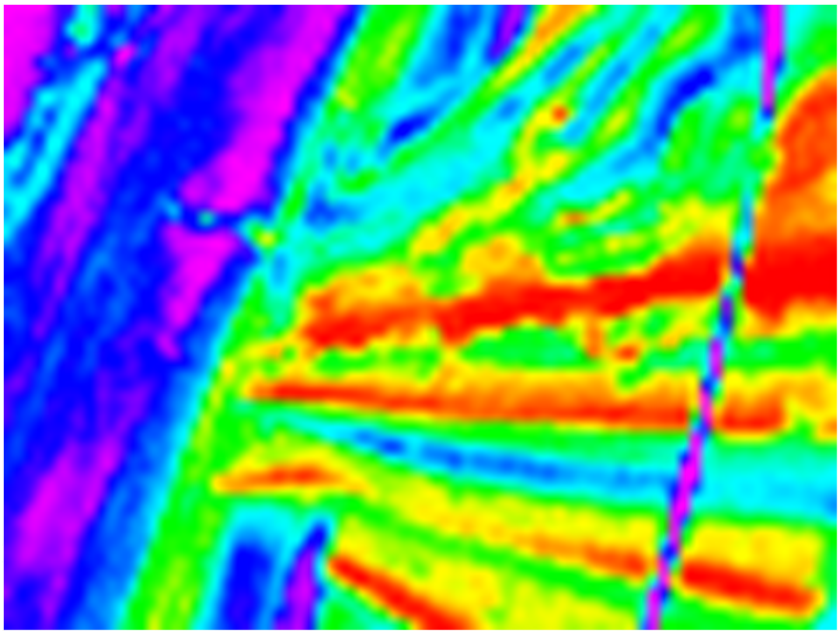
Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a gas sampling port over Digester 2.	6
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: North	PHOTOGRAPHER	Dave Hensley	11/13/2018

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a pressure relieve valve (PRV) for Digester 2.	7
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: Northeast	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a recently repaired expansion joint on the roof of Digester 2.	8
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: South	PHOTOGRAPHER	Dave Hensley	11/13/2018



CASE NO. 18NE1113	DESCRIPTION	This photograph is a thermal image of the repair expansion joint shown in Photograph 8.	9
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: South	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a repaired expansion joint on Digester 2.	10
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: N/A	PHOTOGRAPHER	Dave Hensley	11/13/2018

CASE NO. 18NE1113	DESCRIPTION	This photograph shows the south end of Digester 1 and an earthen containment structure that has been constructed on the ground surface at the south end of Digester 1 (right).	11
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: Southeast	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a ferric chloride tank with staining from a tank overfill event.	12
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: East	PHOTOGRAPHER	Dave Hensley	11/13/2018

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a hydrogen sulfide scrubber at the biogas skid.	13
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: Northeast	PHOTOGRAPHER	Dave Hensley	11/13/2018

Big Ox Energy – Siouxland, LLC
Dakota City, Nebraska

CASE NO. 18NE1113	DESCRIPTION	This photograph shows a portion of the biogas skid. A carbon dioxide scrubber tower is in the background (right). The arrow indicates the bypass exhaust port.	14
	FACILITY	Big Ox Energy - Siouxland, LLC	Date
Direction: South	PHOTOGRAPHER	Dave Hensley	11/13/2018

Attachment 4
CD – Attached to Report